

- FIGS. 2 and 3.—“Finely granular” hæmic leucocytes (cat), incubated for twenty-four hours at 30° C, and beginning to undergo “vacuolation.” In most of the vacuoles no particles are visible. Photographed while living.  $\times 1000$ .
- FIG. 4.—Two incubated leucocytes. In each the outline of the cell body is just visible; the nucleus, darkly stained with methylene blue, has been made to smear; before incubation the nuclei of the leucocytes would not smear.
- FIG. 5.—“Finely granular” hæmic leucocyte (dog), killed very slowly (5° C, ten days). The nucleus has become spheroidal and excentric in position. When fresh the granules of the cell-body were exhibiting Brownian movement. Osmic vapour, then Ehrlich’s logwood.  $\times 1000$ .
- FIGS. 6 and 7.—“Finely granular” hæmic leucocytes (dog), showing “rosette” form of nucleus commonly assumed. Blood oxalated and incubated for forty-eight hours. Fixation by drying over osmic vapour. Hæmatoxylin and eosin.  $\times 1000$ .

March 1, 1894.

Dr. PERKIN, Vice-President, in the Chair.

A List of the Presents received was laid on the table, and thanks ordered for them.

In pursuance of the Statutes, the names of the Candidates for election into the Society were read, as follows:—

Bateman, Sir Frederic, M.D.	Dibdin, William J., F.C.S.
Bateson, William, M.A.	Downing, Arthur Matthew Weld, M.A.
Beevor, Charles Edward, M.D.	Edgeworth, Professor Francis Ysidro, M.A.
Bell, Robert.	Etheridge, Robert, F.G.S.
Boulenger, George Albert.	Froude, Robert Edmund.
Bourne, Professor Alfred Gibbs, D.Sc.	Gray, Andrew, M.A.
Bovey, Henry Taylor, M.A.	Griffiths, Ernest Howard, M.A.
Bradford, John Rose, M.D.	Haddon, Professor Alfred Cort, M.A.
Bryan, George Hartley, M.A.	Heycock, Charles Thomas, M.A.
Burdett, Henry Charles.	Hickson, Sydney John, M.A.
Buzzard, Thomas, M.D.	Hill, George Henry, M.Inst.C.E.
Callaway, Charles, D.Sc.	Hill, Professor M. J. M., M.A.
Callendar, Hugh Longbourne.	Hinde, George Jennings, Ph.D.
Cheyne, William Watson, F.R.C.S.	Howes, Professor George Bond, F.L.S.
Clarke, Sir George Sydenham, Major R.E.	Jones, Professor John Viriamu, M.A.
Clowes, Professor Frank, D.Sc.	
Corfield, William Henry, M.D.	
Darwin, Leonard, Major R.E.	

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Lansdell, Rev. Henry, D.D.	Smith, Rev. Frederick John, M.A.
Lockwood, Charles Barrett, F.R.C.S.	Stebbing, Rev. Thomas Roscoe Rede, M.A.
Love, Augustus Edward Hough, M.A.	Stewart, Professor Charles, M.R.C.S.
Lydekker, Richard, B.A.	Stirling, William, M.D.
McConnell, James Frederick Parry, Surgeon-Major, F.R.C.P.	Stuart, Professor T. P. Ander- son, M.D.
Macewen, Professor William, M.D.	Sutton, J. Bland.
Mansergh, James, M.Inst.C.E.	Swan, Joseph Wilson.
Martin, John Biddulph, M.A.	Thomson, Professor John Millar, F.C.S.
Martin, Sidney, M.D.	Truman, Edwin Thomas, M.R.C.S.
Matthey, Edward, F.C.S.	Tuke, Daniel Hack, M.D.
Minchin, Professor George M., M.A.	Ulrich, Professor George Henry Frederick, F.G.S.
Mott, Frederick Walker, M.D.	Veley, Victor Hubert, M.A.
Notter, James Lane, Surgeon- Lieut.-Col.	Waterhouse, James, Colonel.
Ord, William Miller, M.D.	Webb, Francis William, M.Inst. C.E.
Penrose, Francis Cranmer, M.A.	Whymper, Edward, F.R.G.S.
Power, William Henry.	Wimshurst, James.
Purdie, Thomas, B.Sc.	Windle, Bertram Coghill Allen, M.D.
Reade, Thomas Mellard, F.G.S.	Woodward, Horace Bolingbroke, F.G.S.
Rutley, Frank, F.G.S.	Wynne, William Palmer, D.Sc.
Salomons, Sir David, M.A.	
Scott, Alexander, M.A.	
Scott, Dukinfield Henry, M.A.	
Seeböhm, Henry, F.L.S.	

The following Papers were read :—

- I. "Preliminary Note on Bilateral Degeneration in the Spinal Cord of Monkeys (*Macacus sinicus*) following Unilateral Lesion of the Cortex Cerebri." By E. L. MELLUS, M.D. Communicated by Professor V. HORSLEY, F.R.S. Received December 22, 1893.

(From the Pathological Laboratory of University College, London.)

Having for some time been engaged in an investigation of the question as to how far the fibres of each pyramid descend both halves of the spinal cord, I am in a position to state that in the bonnet monkey (*Macacus sinicus*) the following arrangement prevails.

*Method of Investigation.*—The animal being etherised, and the left hemisphere of the brain exposed by a single trephine hole (sometimes enlarged afterwards), a small portion of the excitable area of the

motor cortex was selected as detailed below, the selection being confirmed in each case by electrical stimulation. A small piece of the cortex, about 0.4 cm. square, constituting the focus of the movement observed, was removed, care being taken to remove also a little of the underlying corona radiata to be sure that no cortex was left. The wounds healed, without exception, within 24 hours by first intention. Beyond slight paresis, which generally disappeared in 24 hours, no symptoms were observed to result from the excision. Professor Horsley kindly did the operations for me. After three weeks the animals were killed, the brain and cord hardened in Müller's solution, and stained in osmic acid after the method of Marchi.

*Results of Investigations.*

Three foci of representation were selected for excision, the left hemisphere being chosen in every case (*vide* Method of Investigation).

I. Focus for the movements of the thumb.

II. Focus for the movements of the hallux.

The course taken by the descending degenerated fibres was as follows:—

I. *Hallux Focus removed.*—In this case the lesion consisted of the removal of about 16 sq. mm. of cortex between the superior precentral sulcus and the fissure of Rolando, and bounded below by the level of the superior frontal sulcus.

Degenerated fibres were found in both lateral columns of the cord, the large majority being on the right side. The degenerated fibres were scattered throughout the entire area of the crossed or lateral pyramidal tract, not being restricted to any special part of it, though it might be said they were a little more dense posteriorly. Throughout the cervical, dorsal, and lumbar regions the total number of degenerated fibres was not diminished, though, of course, relatively increased in the lower cord. In the pons and medulla the degeneration was entirely confined to the left pyramidal tract (the side of the lesion). At the decussation in the upper cervical region the degenerated tract divided; about one-third going to the lateral column of the same side, the remaining two-thirds crossing to the lateral tract on the opposite side. In the upper cervical region there were a very few degenerated fibres remaining in the direct tract (anterior column), and below the middle of the cervical enlargement none could be seen.

II. *Thumb Focus removed.*—In this case the lesion consisted of a similar removal of cortex at a point just above the lower end of the intra-parietal sulcus, and between it and the fissure of Rolando, and, consequently, just behind the inferior genu of the fissure of Rolando

(Beevor and Horsley). As in the case of the hallux focus, degeneration was also confined to the pyramidal tracts of the same side (left) as the lesion, throughout the pons and medulla. At the decussation of the pyramids there was also a slight division of the degenerated fibres, but in this case a few fibres only (less than one in ten) went to the lateral column of the same (left) side of the cord. There may have been two or three degenerated fibres left in the direct tract after the decussation, but this could not be positively stated. In the cervical and upper dorsal regions the degenerated fibres gradually decreased in number. At the level of the second dorsal there were a very few degenerated fibres still left in each lateral column. At the third dorsal they had entirely disappeared.

It seems probable, from these observations, that a second decussation lower down in the cord—recrossing—does not occur, and that the bi-lateral degeneration observed by Pitres, Sherrington, Langley, Muratoff, and others is a genuine bi-lateral descent of fibres from one hemisphere.

## II. "On the Relations of the Secular Variation of the Magnetic Declination and Inclination at London, Cape of Good Hope, St. Helena and Ascension Island, as exhibited on the Magnetarium." By HENRY WILDE, F.R.S. Received February 19, 1894.

In a paper which was read before the Royal Society in June, 1890, I showed that the principal phenomena of terrestrial magnetism and the secular changes in its horizontal and vertical components could be explained on the assumption of an electro-dynamic substance (presumably liquid or gaseous) rotating within the crust of the earth in the plane of the ecliptic, and a little slower than the diurnal rotation. By means of some electro-mechanism, new to experimental science, which I termed a magnetarium, the period of backward rotation of the internal electro-dynamic sphere required for the secular variations of the magnetic elements on different parts of the earth's surface was found to be 960 years, or 22·5 minutes of a degree annually. It was also demonstrated that the inclination of the axes of the electro-dynamic and terrestrial globes to each other of  $20^{\circ} 30'$ , was the cause of the inequality of the declination periods about the same meridian in the northern and southern hemispheres; as instanced in the short period of outward westerly declination at London, and the long period of outward westerly declination at the Cape of Good Hope and St. Helena.

The object of the present communication is, firstly, to make a more